Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 206 882 8080
Telex 160520
Fax 206 936 7329

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Microsoft



December 7, 1994

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Re: Docket 93-61
Exparte Presentation

Dear Mr. Caton:

On December 7, 1994, copies of the attached letter were provided to Chairman Hundt and the other Commissioners, as well as to Richard Smith and Regina Keeney. Two copies of this letter are provided for the public record in accordance with the Commission's rules.

If there are any questions in this regard, please contact the undersigned.

Sincerely,

Megan J. Bowman
Federal Affairs Manager

Enclosure

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 206 882 8080
Telex 160520
Fax 206 936 7329



December 6, 1994

The Honorable Reed Hundt
Chairman
Federal Communications Commission
1919 M Street, N. W.
Washington, D.C. 20554

Re: Docket 93-61

Dear Chairman Hundt:

Microsoft Corporation is a world leader in the design, development and manufacture of computer software products for use in a variety of applications and market areas. Microsoft foresees present and future products that require the use of unlicensed wireless data and voice communications technology. These products require access to adequate radio spectrum for wireless data communications networks.

The types of products that the computer industry is developing include:

- Wireless local, campus, regional and widearea networks;
- Wireless handheld and pocket computers;
- Wireless remote network access support for notebook and future handheld computing devices;
- Wireless digital voice links;
- Wireless remote facsimile transmission (FAX),
- Wireless image communications;
- Wireless data broadcasting and information delivery;
- Wireless electronic mail delivery and personal messaging;
- Wireless remote control systems;
- Wireless multimedia applications;
- And many new devices and applications that are yet to be envisioned.

By the end of the decade this broad category of wireless local area products will be a multi-billion dollar industry - but only if access to adequate radio spectrum is provided, including significant provisions for unlicensed wireless data services.

Microsoft, like many computer companies has only recently begun pursuing projects in wireless communications. Consequently, the Docket 93-61 proceeding has only recently come to our attention. For this reason we request that the Commission delay making any decisions in this matter until such time as a more complete record of the issues surrounding Docket 93-61 can be fully developed.

Docket 93-61 proposes to modify access and use of the 902-928 MHz band in such a way that continued use by low power unlicensed devices will be greatly harmed.

Microsoft strongly recommends that the commission preserve the 902-928 MHz band and other allocated Part 15 bands for unlicensed wireless devices and services as is currently specified in Part 15 of the Commission's rules. Microsoft recommends that the existing Part 15 rules remain in place and that no new requirements, such as height limitations or point-to-point-only restrictions be applied to any of the Part 15 allocations.

The 902-928 MHz band is already in use today by millions of unlicensed devices and is prime operating territory for millions more because its characteristics are so similar to the nearly adjoining cellular, enhanced SMR, paging and narrowband PCS services. Common components, delivered in high volume to equipment manufacturers for the adjoining services enable high quality products to be produced at consumer-level pricing.

Automatic Vehicle Monitoring (AVM) systems, which are currently authorized for the 902-928 MHz band, are a spectrum inefficient vehicle location technology whose time is now past. For example, 20 years after AVM was authorized by the Commission's rules, Teletrac has only 40,000 subscribers. A wide variety of new technologies, many of which are available now, provide location services at lower cost, are more spectrum efficient, and are able to share the spectrum with other users.

Several alternative technologies for location services exist:

- The Global Positioning System (GPS). GPS uses satellite technology to provide time and location services to users through small (handheld) receiving terminals. Differential GPS technology enhances the basic GPS system to provide pin point accuracy in position measurement. Advances in semiconductors are increasing component integration and greatly reducing the cost of GPS navigation technology such that GPS will be integrated into future computer and communication equipment. If desired, GPS provided location information can be transmitted over existing terrestrial wireless networks to deliver the unit's location to a monitoring station.

- Using Metricom's *Ricochet* network, Microsoft has demonstrated how Metricom's technology can be used to provide surprisingly accurate position information to the network user. Metricom's unique addressing scheme uses latitude and longitude information to perform network routing. Each network node makes its own latitude and longitude information available to the user. Microsoft software uses the latitude and longitude information, together with measured signal strength, to determine the user's approximate position.
- The FCC, in Docket CC Docket No. 94-102 has proposed that cellular and other wireless services provide location information for the purpose of implementing wireless enhanced 911 service. Because such services will be piggybacked onto an existing technology, cellular-provided location services will provide a less expensive and more spectrum efficient solution. In such an environment, CDPD - or RAM Mobile Data - can be used with a simple ping packet scheme to provide approximate location information.
- Many other types of location systems have been built, such as systems based on proximity networks that detect the presence of a passing vehicle, or where the vehicle detects the position indicator along a roadway. Coupled with dead reckoning, such systems have been used to provide location services by railroads and vehicle dispatch operations.

If, after these alternatives are considered there is still some compelling reason to use any portion of the 902-928 MHz band for automatic vehicle location services, then only the minimum essential spectrum should be allocated for their use. AVM systems, like any other spectrum user, must use spectrum efficient technologies and share the spectrum with other users. High power, continuous duty-cycle AVM transmitters do not belong in this band. Their use renders the Part 15 allocations unusable, causing drastic harm to the computer industry, their customers and the future of mobile computing.

Because there are few reasons today for separate AVM technology to be deployed at all, the FCC must ensure that any AVM systems:

- Must use the minimum practicable bandwidth;
- Must use technology that accommodates other users of the 902-928 MHz band, including low power unlicensed devices.

Spread spectrum technology in the 902-928 MHz band, such as that used by Metricom's *Ricochet* network, products from Proxim, Symbol Technologies, Telxon, SpectraLink, and Itron, plus millions of consumer cordless telephones, is essential to the development and deployment of widespread mobile computing. Microsoft is working in a number of product categories, including handheld computers, notebook computing technologies, computer networking and consumer applications for which unlicensed wireless technology is a critical success factor to meet the demands of the nation's businesses and consumers.

There are precious few bands allocated for ad hoc, uncoordinated, unlicensed devices and high speed wireless data operations. All such bands are shared allocations except for the strictly local area unlicensed PCS operation at 1910-1930 MHz (although separate issues regarding relocation of existing incumbent microwave users will render this band unusable for many years to come). The Commission must take all reasonable steps to encourage continued unlicensed device operation over all existing Part 15 allocations. Full access to these bands is critical to the future growth of mobile computing.

Sincerely,

John Ludwig,
Director, Personal Systems Division

Edward Mitchell,
Program Manager, Windows
Wireless Communications
Services

Cc: Commissioner James Quello
Commissioner Andrew Barrett
Commissioner Susan Ness
Commissioner Rachelle Chong
Richard Smith, Chief, Office of Engineering and Technology
Regina Keeney, Chief, Wireless Telecommunications Bureau